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EXAMINER
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WARTALOWICZ, PAUL A

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* CHARLES R. RAPIER, SHUIBO XIE, BAILI HU,  
BEATRICE C. ORTEGO, DAVID E. SIMON, and DAVID M. MINAHAN

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Appeal 2009-014052  
Application 10/706,645  
Technology Center 1700

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Before: CATHERINE Q. TIMM, BEVERLY A. FRANKLIN, and  
LINDA M. GAUDETTE, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

I. STATEMENT OF CASE

Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision to reject claims 1-9, 11-13, 16-25, 40, 42-49, 76, 77, 80, 81, and 83-90. We have jurisdiction under 35 U.S.C. § 6(b).

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

We REVERSE.

Appellants' invention relates to catalyst supports having high surface area and stability in ultra high temperature conditions and to the catalytic conversion of light hydrocarbons (e.g., natural gas) to produce synthesis gas (Spec. ¶ [0002]). Claim 1 is illustrative:

1. A high temperature stable catalyst support comprising the following crystalline structures:

an alumina phase selected from the group consisting of alpha-alumina, theta-alumina and combinations thereof;

a rare earth aluminate of a hexaaluminate or hexaaluminate-like structure comprising at least one rare earth metal and having a high molar ratio of aluminum to rare earth metal between 11:1 and 14:1; and

a rare earth aluminate of a perovskite or perovskite-like structure comprising the at least one rare earth metal and having a low molar ratio of aluminum to rare-earth metal of less than 2:1,

wherein the catalyst support contains not more than 20% of alpha-alumina, and less than 100 wt% to about 1 wt% of the rare earth aluminate with the high molar ratio of aluminum to rare earth metal.

## II. DISPOSITIVE ISSUE

The dispositive issue with respect to each of the Examiner's rejections and arising from the contentions of Appellants and the Examiner is: does the evidence support the Appellants' view that the Examiner erred in clearly explaining a rationale for finding that a catalyst support comprising both lanthanum hexa-aluminate and alpha-alumina or theta-alumina, as recited in the claims, would have been obvious to a person of ordinary skill in the art having before them the teachings of McCarty (US 6,015,285; Jan. 18, 2000),

Deckman (US 6,830,596 B1, Dec. 14, 2001), and Yamashita (US 4,906,176; Mar. 6, 1990)? We answer this question the affirmative.

### III. ANALYSIS

The Examiner initially finds that McCarty teaches a support that “comprises lanthanum oxide hexa-aluminate (col. 3, lines 26-30) and lanthanum oxide alumina hexa-aluminate (meets the limitation wherein hexa-aluminate and alpha-alumina or theta-alumina comprises a support, col. 3, lines 28-31)” (Ans. 4).

Appellants argue that McCarty “fails to teach the presence of alpha-alumina and/or theta-alumina in combination with a lanthanum hexaaluminate in a common support” (Br. 13). To which the Examiner responds that “McCarty is not relied upon to teach the presence of alpha-alumina and/or theta-alumina in combination with a lanthanum hexa-aluminate in a common support” (Ans. 9). Yet, the Examiner also states that “McCarty does propose that alumina can be a candidate for a support material (col. 5, lines 1-29) (Ans. 12) and that “although alpha-alumina is used in the barrier layer, one would look to the desired properties of the end product and in the instant case it is well known to use alpha alumina in a catalytic support to aid with catalytic dispersion” (Ans. 12-13).

It does not appear that the Examiner is relying on the teachings in the secondary reference Deckman (US 6,830,596 B1, Dec. 14, 2001) as teaching an alpha- or theta-alumina in a support, since the Examiner only states that Deckman teaches a “stabilized alumina” in a support (Ans. 4 and 6), and not an alpha- or theta-alumina. Yamashita is directed only to a support of L- $\beta$ -alumina, which may be produced by calcining a mixture of lanthanum and aluminum or alumina (Yamashita, col. 3, line 66 to col. 4, l. 4).

In the Reply Brief, Appellants state that “it is not clear what reference has been relied upon for the teaching of the alumina component (in alpha and/or theta form) in the catalyst support” (Reply Br. 3). We agree with the Appellants. The Examiner’s rejection fails to clearly explain what facts are being relied upon in the references to conclude that a support containing alpha-alumina or theta-alumina in combination with a rare earth hexaaluminate would have been obvious to the ordinary artisan. *In re Rouffet*, 149 F.3d 1350, 1358 (Fed. Cir. 1998) (“hindsight” is inferred when the specific understanding or principal within the knowledge of one of ordinary skill in the art leading to the modification of the prior art in order to arrive at appellant's claimed invention has not been explained).

#### IV. CONCLUSION

On the record before us and for the reasons discussed above, we cannot sustain the rejections maintained by the Examiner.

#### V. DECISION

We reverse the Examiner’s decision.

REVERSED

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